2013 WETLAND MITIGATION MONITORING REPORT FOR THE SCCC & DIAMOND SITES

Town of Kearny
Hudson County, New Jersey
- **SCCC Site - Block 287, Lots 48, 49, 50, 51, 52, 52R and portion of Lot 32.01**
- **Diamond Site - Block 287, Lots 32.02, 46, 47, and 47R**

Prepared for:

Key Environmental
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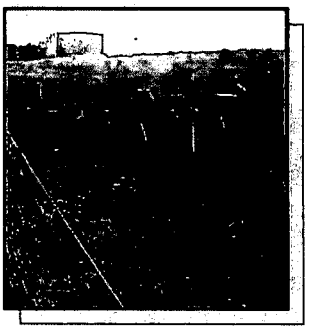
Raritan, New Jersey 08869



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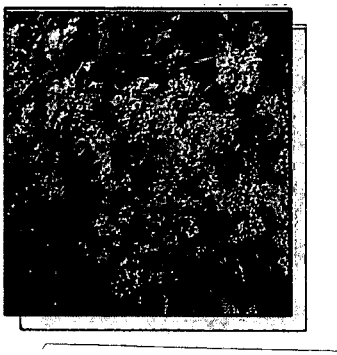

Project Number: 502.016

January 2014

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1.0 INTRODUCTION

This Monitoring Report, the second of five, describes and documents the status of the compensatory wetland mitigation at the Standard Chlorine Chemical Company, Inc, (SCCC) & Diamond Sites located at 1015, 1025-1035 Belleville Turnpike, Kearny, Hudson County, New Jersey (hereinafter termed the Site) (Figure 1). The property commonly known as the "Diamond Site" is 27 acres while the SCCC site totals 25 acres. The Diamond Site is being remediated pursuant to a New Jersey Department of Environmental Protection (NJDEP) Administrative Consent Order. The SCCC Site was previously subject to a NJDEP Administrative Consent Order and is currently listed on the U.S. Environmental Protection Agency's (USEPA) National Priorities List for CERCLA Sites. An Interim Response Action that included remediation of both of these properties was completed by the Peninsula Restoration Group (PRG), a group comprised of Standard Chlorine Chemical Co., Inc. (SCCC), Tierra Solutions, Inc. (Tierra) and Beazer East, Inc. The ongoing operations, maintenance and monitoring activities, including monitoring of the wetlands mitigation, are being performed by the Cooperating Parties Group (Group) which is comprised of Beazer, Tierra and Cooper Industries, LLC. Implementation of the approved IRAW[1] necessitated the disturbance of on-site wetlands. The site is being remediated under a Remediation Investigation/Feasibility Study Administrative Order on Consent between the USEPA and the Group.

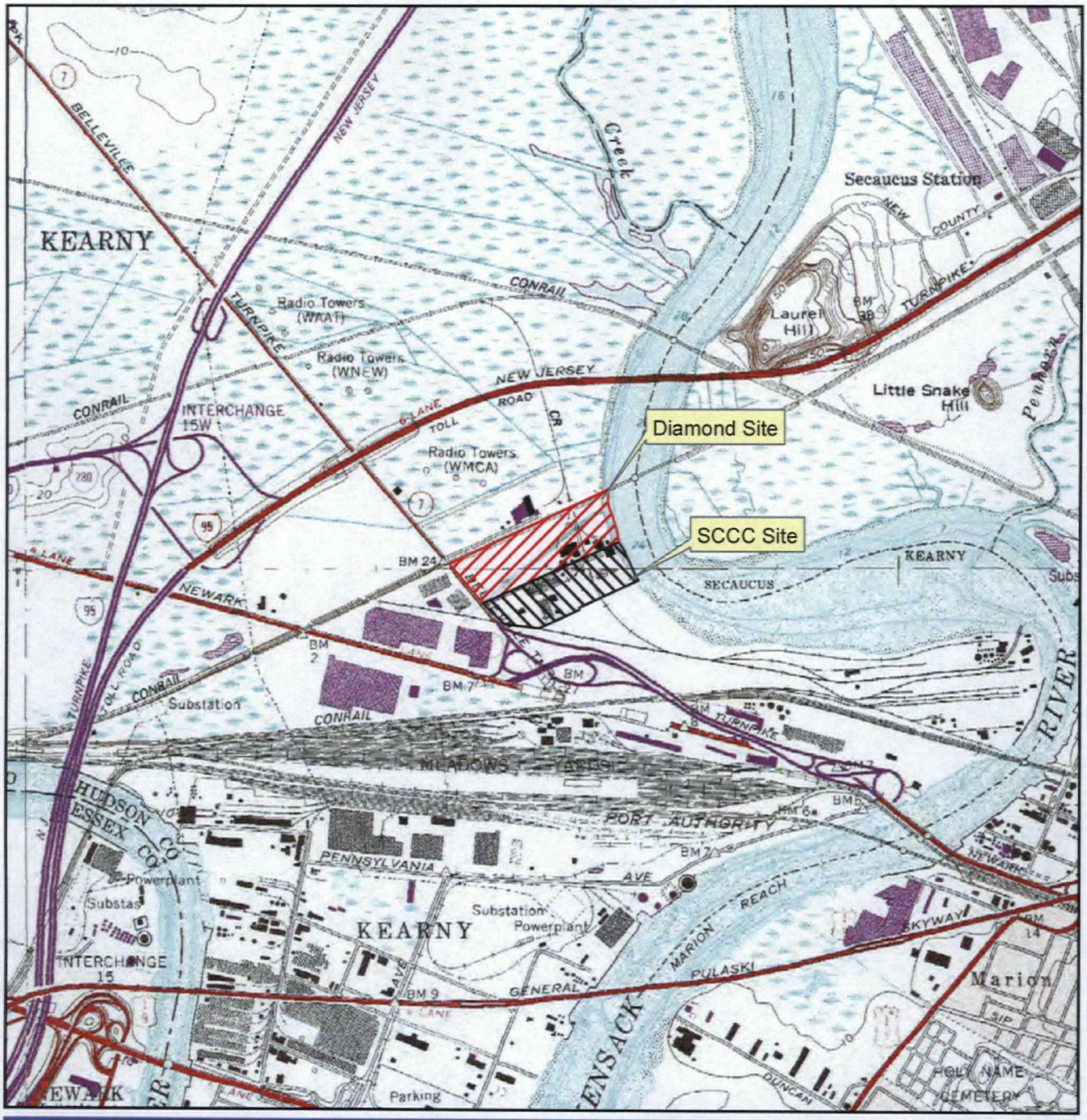
The United States Army Corps of Engineers (USACE) and the USEPA have determined that the USEPA will have jurisdiction for impacts to regulated tidal and isolated and freshwater emergent wetlands. The NJDEP authorized tidal wetland impacts associated with the implementation of the remediation activities through a Waterfront Development Permit (WDP)/Flood Hazard Permit (FHP) and Water Quality Certificate (Appendix A). These approvals were obtained on March 26, 2010 (permit Nos. 0907-09-0007FHA 09001, 0907-09-0007.1 WFD090001 and 0907-09-0007.1 CDT0800001). The USEPA approved[2] of the wetland disturbance on June 11, 2010. Copies of all relevant permits and approvals related to this project are provided in Appendix A. As a condition of these approvals a compensatory mitigation plan for impacts to the intertidal/subtidal shallows and tidal wetlands was required. Accordingly, a Wetland Mitigation Plan[3] (WMP) prepared by Key Environmental Inc.) was designed to mitigate the loss of the existing wetland plant communities at the ratio (1:1) as set forth in the NJDEP Waterfront Development Permit/Flood Hazard Permit and Water Quality Certificate and as approved by USEPA.

In order to implement the approved Interim Response Action Workplan (IRAW) activities a total of 1.65 acres of on-site wetlands were to be unavoidably disturbed. The 1.65 acres

[1] NJDEP, March 27, 2008 Interim Response Action Work Plan Approval, Standard Chlorine Chemical Company, Inc (SCC/116) and Tierra Solutions (Diamond Shamrock/113) 1015 to 1035 Belleville Turnpike, Kearny Town NJ

[2] USEPA, Approval of Applicable Relevant and Appropriate Requirements (ARARs).

[3] Key Environmental Inc, April 2010, Shoreline Restoration and Tidal Emergent Wetland Mitigation Plan, Standard Chlorine Chemical Co Inc and Tierra Solutions Inc., Interim Response Action, Submitted to the NJDEP and USEPA.



Princeton Hydro

FIGURE 1: USGS LOCATION MAP

KEY ENVIRONMENTAL
STANDARD CHLORINE CHEMICAL COMPANY &
DIAMOND SITE
BLOCK 287
LOTS 46, 47, 48, 49, 50, 51, 52 & 52R
TOWN OF KEARNY
HUDSON COUNTY, NEW JERSEY

LEGEND

Site Boundaries

Diamond Site

SCCC Site

1 inch = 2,000 feet

0 1,000 2,000 Feet

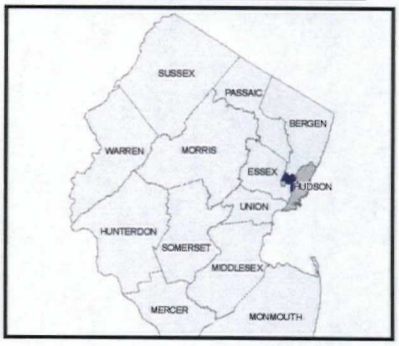
PRINCETON HYDRO, LLC.
1108 OLD YORK ROAD
P.O. BOX 720
RINGOES, NJ 08551

SOURCES:

1. Site boundaries are not an official PLS survey; inaccuracies may exist.

2. USGS Topographic Digital Raster Graphic obtained from USDA Geospatial Data Gateway, Hudson County, New Jersey; Weehawken and Jersey City, NJ Quadrangles.

NEW JERSEY COUNTY MAP



of on-site wetlands consisted of 0.06 acres of estuarine tidal wetlands, 0.47 acres of figure isolated wetlands and 1.12 acres of freshwater wetlands. In addition, approximately 1.3 acres of intertidal subtidal shallows (mudflats) were also to be disturbed as part of the approved remediation activities. Accordingly, the WMP compensated for disturbance by providing mitigation consisting of 0.45 acres of tidal emergent wetland restoration along the Hackensack River shoreline, 1.20 acres of freshwater emergent wetlands in upland areas and the restoration of approximately 0.95 acres of intertidal sub-tidal shallows. Of the 0.45 acres of tidal wetland mitigation proposed, 0.39 acres was to compensate for an equivalent amount of impacts to freshwater wetlands.

The NJDEP approved the mitigation plan on June 30, 2010 (NJDEP, June 30 2010). Specifically, the Division is approving the mitigation project shown on the plan entitled "Shoreline Restoration and Tidal Emergent Wetland Mitigation Plan SCC and Diamond Sites, Kearny, Hudson County, New Jersey, Block 287-Lots, 47, 47R, 49, 52 and 52R" sheets MTGTE-00-04, dated April 23, 2010, prepared by Key Environmental Incorporated".

Once the remediation was underway it became apparent for several reasons that the proposed 0.45 acres of tidal wetland restoration along the shoreline of the Hackensack River would be difficult to successfully establish. One of the foremost reasons behind this determination had to do with the results of an updated topographic survey of the intertidal area that was completed at the beginning of remediation activities. When the updated survey was compared to the 2008 topographic survey it revealed lower elevations along the shoreline in the area proposed for wetland restoration. It was suspected that the elevation differences between the two surveys was a result of erosion and/or shifting of the shoreline due to wave/current action caused by severe storms, ice flows, etc. Whatever the reason for the difference in elevation, the change was of sufficient magnitude to be a concern relative to the successful establishment of a wetland at this location and a modification to the WMP was deemed necessary.

As a modification to the WMP, an April 8, 2011 letter[4] provided justification and a proposed combination of the purchase of off-site credits (0.225 acres) and construction of on-site intertidal sub-tidal restoration to compensate for the vegetation portion of the tidal emergent mitigation. There was no change proposed to the mitigation planned for the upland areas or the intertidal restoration. The NJDEP and USEPA approved[5] the overall approach set forth in the April 8, 2011 letter. Therefore, mitigation at the sites for a combined 1.65 acres of freshwater and tidal emergent wetlands will be accomplished by a combination of the construction of 1.20 acres of freshwater emergent wetlands in upland areas, the restoration of approximately 1.3 acres of intertidal sub-tidal shallows and the purchase of 0.225 wetland mitigation credits.

[4] Princeton Hydro, April 8, 2011, Request to Modify Wetland Mitigation Approach SCCC and Diamond Sites, Kearny, Hudson County. NJDEP Permit No. 0907-09-00071.

[5] NJDEP and USEPA, e-Mail Communication of July 1, 2011, Standard Chlorine Chemical Company and Diamond Sites – Wetland Mitigation.

The Group entered into an agreement with Evergreen Environmental, LLC to purchase 0.225 acres of off-site wetland credits from the Marsh Resource MRI-3 Wetland Mitigation Bank located within the Hackensack Meadowlands. The purchase of the wetland credits was completed on June 24, 2012.

This monitoring report was developed based on the standard conditions required by the NJDEP for wetland mitigation sites. Data collected during the inspection period and color photographs of the mitigation site, are presented in the appendices.

2.0 PRE-CONSTRUCTION SITE ENVIRONMENT

As described in the wetland delineation report prepared by Princeton Hydro (May 2009)[6] the SCCC and Diamond sites were composed of four distinct plant communities: freshwater emergent wetland (including ditches and swales), estuarine intertidal wetland, urban upland meadow and developed land.

Developed land composed a majority of both the SCCC and Diamond Sites and was assigned to those areas in which frequent human activity and maintenance influence the composition and structure of the existing plant community. Most of this land class was associated with interim remediation areas, historic buildings, access roads, and parking lots. The vegetation in these areas was scarce but contained ruderal species and few landscaped areas consisting of ornamental plantings. The ruderal species located in this area were composed of Eastern cottonwood, staghorn sumac, common plantain (*Plantago lanceolata*), English plantain (*Plantago lanceolata*), goldenrod (*Solidago spp.*), and various grasses.

Urban upland meadow was mostly located in the north central portion of the Diamond Site and in the eastern section of the SCCC Site. Most of this community type was dominated by ruderal species typical of disturbed land, which included little blue stem (*Schizachyrium scoparium*), goldenrod (*Solidago spp.*), multiflora rose (*Rosa multiflora*), common reed, and common milkweed (*Asclepias syriaca*). Scattered throughout the urban meadow were patches of dense shrubs, which included Allegheny blackberry (*Rubus allegheniensis*), Northern bayberry (*Myrica pensylvanica*), and Russian olive (*Elaeagnus angustifolia*). A few Eastern cottonwood (*Populus deltoides*) and staghorn sumac (*Rhus typhina*) trees were scattered throughout the urban meadow.

Most of the freshwater emergent wetlands were located in the western portion of the Diamond Site and the western and southeastern portions of the SCCC Site. Some of the SCCC Site wetlands were associated with onsite drainage features such as ditches or swales. Freshwater emergent wetlands were also identified in the south-central portion of the Diamond Site, adjacent to the access road between the SCCC and Diamond Sites. This wetland area was a depressional wetland associated with stormwater runoff from the adjacent upland areas. Most of the freshwater emergent wetlands were dominated by near mono-specific stands of common reed (*Phragmites australis*). Other wetland species observed in the emergent wetlands included sensitive fern (*Onoclea sensibilis*), purple

loosestrife (*Lythrum salicaria*), and jewelweed (*Impatiens capensis*).

Several wetland areas totaling 0.82 acres were determined to be isolated as there was no evidence of hydrologic connections to other "Waters of the United States". Most of the areas that were determined to be isolated were located on the Diamond Site. The SCCC Site possessed freshwater emergent wetlands and several ditches/swales that possessed a hydrologic connection to the Hackensack River.

Estuarine intertidal wetlands and flats were located in the eastern section of both the SCCC and Diamond Sites along the Hackensack River. The approximately 0.06 acres of intertidal wetlands were composed predominantly of low marsh vegetation dominated by smooth cordgrass (*Spartina alterniflora*). The approximately 1.3 acres of intertidal habitat present on both the SCCC and Diamond Sites consisted of consisted of barren stretches of sand and fill, specifically rip-rap, within which were scattered patches of vegetation. Both the SCCC and Diamond Site shorelines contained evidence of erosion, specifically related to the presence of clumps of smooth cordgrass that were detached from their respective mats. Areas where smooth cordgrass was present appeared to be correlated to the presence of a stable substrate such as that provided by rip-rap. The rip-rap appears to be serving as an energy dissipating structure facilitating the development and stability of the smooth cordgrass mats.

3.0 WETLAND MITIGATION IMPLEMENTATION

As previously indicated the compensatory mitigation requirements associated with the remediation of the Site included the following;

- Restoration of 1.20 acres of freshwater wetland;
- Purchasing 0.225 wetland credits; and,
- Restoration of 1.4 acres intertidal flats.

Restoration of the intertidal flats was completed July 2011. The final as-built survey (MTG-01, Appendix B) identified the total mudflat restoration area as being 1.41 acres.

The 1.20 acres of freshwater wetland mitigation was generally located in the same area as the SCCC drainage ditches. The mitigation of freshwater wetlands was completed in November 2011. Although the mitigation area was generally consistent with the SCCC site drainage ditch system as per the approved design, the mitigation area was extended during the construction of the mitigation area into adjacent drainage ditch areas in order to attain the required wetland acreage. The mitigation activities were completed in November 2011. According to the final as-built survey prepared by Key Environmental Inc., the total freshwater wetland mitigation area was 1.28 acres, 0.08 acres greater than the 1.20 acres required.

4.0 WETLAND PLANTING

The earthwork required to construct the wetlands was completed in the fall of 2011. The planting component of the mitigation project was completed immediately after completion

of the earth work and was planted was completed in November of 2010. The type and quantity of the plant material installed at the site was dependent on the habitat type and location within the mitigation site which is summarized in the following tables. Tree and shrub species were proposed for the transition area and tree, shrub and herbaceous plant species were proposed for the wetland area. The specific species and quantity planted are presented in Table 1.

Table 1: Plant material proposed and installed in the restored wetland and restored transition area sites.

Freshwater Wetlands Mitigation Area		
Scientific name	**Common name**	**Quantity**
Spartina patens	Salt meadow cordgrass	700
Distichlis spicata	Salt grass	2100
Spartina pectinata	Prairie cordgrass	750
Juncus geradii	Black grass	300
Hibiscus Moschuetes	Swamp mallow	300
Spartina cynosuiroides	Big cordgrass	300
Solidago sempirvirens	Seaside goldenrod	300
Scirpus robustus	Salt marsh bulrush	300
Panicum virgatum	Switch grass	750
Baccharis halimifolia	Groundsel bush	240*

* 80 clusters of 3 plants

Table 2: Seed used to attain rapid first year coverage in the mitigation areas.

Common name	**Grass species**	**(lbs pure live seed/acre)**
Annual rye	*Lolium multiflorum*	5
Fall panicum	*Panicum dichotomiflorum*	3
Barnyard grass	*Echinochloa muricata*	2
Switch grass	*Panicum virgatum*	4
Coastal Panic grass	*Panicum amarum*	50
Lady's Thumb	*Polygonum persicaria*	2

5.0 MONITORING METHODOLOGY

The 2013 monitoring inspection differed from that of the initial monitoring report as the data presented is based on the vegetative cover observed in twelve (12) 1x1 meter permanent quadrats established throughout the mitigation site. The permanent quadrats were established to assess the development of vegetative cover during the five-year monitoring program. The quadrats were established in representative locations within the wetland. The location of each sample point is provided in Appendix C.

The vegetative cover within each quadrant was visually estimated in accordance with the *Ocular Estimation of Cover Technique* (USFWS, 1981). The total area of cover was considered to be the area that remained after excluding the areas determined to be un-vegetated. Percent vegetative cover determined by this method is derived by subtracting the un-vegetated area from the total area of each quadrat. The formula below was utilized to determine the percent vegetative cover by this method.

$$\% \text{ Vegetative Cover} = \{(\text{total area} - \text{un-vegetated area})/\text{total area}\} \times 100$$

All references to vegetative cover in this document are based on this formula. Subsequently, the vegetative cover provided by each species was visually estimated. Species that were present, but provided less than 1% cover, were indicated to be "P" (present). The sampling data for each quadrat is provided in Appendix C. The percent vegetative cover estimated in accordance with the method previously described is also shown in Appendix C. The estimates of total vegetative cover provided by this method are essentially relative values comparing the area within each quadrat that is covered by vegetation relative to un-vegetated areas within the quadrat. However, since plant cover can overlap, the total vegetative cover present in any given quadrat often exceeds the percent vegetative cover derived by the above referenced formula. The formula used above provides a simple mechanism to portray the area within each quadrat that is covered by vegetation relative to meeting established regulatory objectives. The use of total vegetative cover, however, more effectively conveys the ecological development of the mitigation area since it takes into account the cover provided by each species. Total vegetative cover thus provides a mechanism to see the changes in cover that occur as the wetland matures and becomes more structurally complex.

6.0 MONITORING INSPECTION

This 2013 wetland monitoring inspection was conducted on September 26, 2013 by Princeton Hydro. As discussed in the previous section the data presented is based on the vegetative cover observed in twelve (12) 1x1 meter permanent quadrats established throughout the mitigation site. The inspection began in the western portion of the mitigation area and culminated at the eastern end of the mitigation site proximate to the Hackensack River (see Appendix C). The number of woody plants present in the mitigation area was calculated based on a count of all live plants. The 2013 monitoring data is summarized in Tables 3 and 4 with the raw data for plant cover provided in

Appendix C. A list of plant species identified in the mitigation site is provided in Appendix D and photographs of the site in Appendix E.

The results of the 2013 monitoring inspection indicated that the freshwater wetland community after its second complete growing season was well established and many parts of the site are on a desirable developmental trajectory with regard to site stability, hydrology and cover. The restored wetland area possessed a well developed emergent wetland with an overall vegetation cover of over 96% (Table 3). However, as is often common in urban restoration sites, portions of the wetland mitigation site possessed a significant quantity of undesirable wetland species, in particular, common reed (*Phragmites australis*) and purple loosestrife (*Lythrum salicaria*). These species were present at varying densities that ranged from zero to 100%. Although portions of the mitigation site were dominated by desirable species, especially those parts of the mitigation site illustrated by Sample plots 1-5 and 7, other areas possessed high levels of invasive species cover (please refer to Appendix E, photographs 1, 3, 5, and 7). In the areas with desirable vegetative cover invasive species such as common reed tended to be present in low numbers or located along the periphery of the mitigation area. Alternatively, sample plots such as 8, 10, 11 and 12 represent those parts of the mitigation site that possessed invasive species cover at or approaching 100% (please refer to Photographs 6, 9 and 10).

Table 3: Percent vegetative cover by planting zone and total cover of the mitigation area.

Planting Area	Percent Vegetative Cover				
	2012	2013	2014	2015	2016
Freshwater Wetland	90%	96.25%			
Invasive Species	37%	28.6%			
Total Coverage	**90%**	**96.25%**			

The overall cover in the wetland mitigation site was over 96% and the cover contributed by invasive species based on the sampling quadrats was estimated to be approximately 28.6% overall. Due to the level of cover provided by common reed and purple loosestrife and the aggressive nature of these plants the implementation of the invasive species management plan described in Section 6.1 was necessary in order to keep the mitigation site on a positive developmental trajectory.

The number of woody plants present observed in the mitigation area relative to the 240 plants installed in 2011 was determined to be approximately 86% (Table 4). This number

currently exceeds the threshold of 85% of desirable hydrophytes set forth as a performance standard in the NJDEP permit. Since groundsel bush (*Baccharis halimifolia*) spreads clonally, the continued increase in stems is anticipated during the course of the monitoring program. In addition, the volunteer establishment of Eastern cottonwood (*Populus deltoides*) will add to the number of desirable woody plants present in the wetland.

Table 4: Woody plants present in the mitigation area.

Scientific name	Quantity Installed	Quantity Observed				
		2012	2013	2014	2015	2016
Baccharis halimifolia	240	206	194			
Populus deltoides	0	0	20			
Total	240	206	214			

6.1 Management of Undesirable Plant Species

Based on sampling data and general observation, the site possessed a level of cover, 28.6%, by undesirable invasive species that included common reed and purple loosestrife. It was due to the widespread occurrence of these species that necessitated the need for adaptive management measures to curtail the spread of these species. In accordance with the standard conditions set forth by the NJDEP for wetland mitigation sites "the final monitoring report must include documentation demonstrating the site is less than 10% occupied by invasive or noxious species". In 2012, portions of the mitigation site were estimated to possess as much as 90% cover by invasive species while nearly half of the areas investigated during the monitoring investigation possessed less than 10% of the two invasive species.

The management measures proposed in 2012 were implemented in 2013 and included the early second hand removal of common reed from those areas of the mitigation site that tended to be mostly dominated by desirable plants. Those areas dominated by common reed were determined to be too well established in 2013 to remove by hand. Those areas with denser well established stands of common reed were cut early in the growing season to facilitate the application of herbicides later in the year. The site was treated with *Aquapro* (glyphosate) on several occasions between August 2013 and October 2013. A spray adjuvant and spray indicator dye were utilized in conjunction with the herbicide to maximize the effectiveness of the treatment program. The adjuvant will enhance the performance of the selected herbicide, whereas the blue dye enabled the applicators to ensure good coverage and an even application of the product. The treatment was conducted by an NJDEP licensed aquatic pesticide applicators/operators in accordance with an aquatic pesticide treatment permit from the NJDEP (permit number 0735-12.) In those areas dominated by desirable species the treatment was selective in that the undesirable species were treated individually by hand. In those areas in which common

reed was the dominant species the entire area was sprayed to achieve the best result. Continued monitoring will be done to retard the colonization and spread of undesirable species.

6.2 Hydrology

The wetland mitigation site is located in a topographically low landscape position previously occupied by the site's drainage network. The wetland still receives water via direct precipitation as well as stormwater runoff from adjacent parts of the site. Since the wetland mitigation site was designed to coincide with the historic drainage network that previously existed on the site its hydrology is reliant on precipitation and stormwater runoff. Wetlands developing in this type of hydrologic environment tend to be dominated by generalist species since the site's hydrology can be extremely variable form month to month and from year to year. Immediately after precipitation events portions of the mitigation areas were observed to be inundated by a few inches of water. Evidence of periodic inundation was also related to the presence of mud cracks and salt rind observed on in the portions of the site proximate to the Hackensack River. Mud cracks are indicative of periodic flooding and ponding of water that subsequently evaporates or infiltrates. The hydrology of these types of wetland systems is typically benefited through the deposition and accretion of organic matter on the soils surface as the site develops. Evidence of positive indicators of wetland hydrology will continue to be evaluated throughout the course of the monitoring period. The dominance of hydrophytes throughout the mitigation area is also indicative of wetland hydrology.

7.0 DISCUSSION AND CORRECTIVE MEASURE RECOMMENDATIONS

Overall the wetland mitigation site appears to be capable of satisfying its design goals and the success criteria set forth by the NJDEP for a compensatory wetland mitigation site. However, as with many mitigation sites, especially those located in highly disturbed landscape settings, the implementation of an adaptive management plan with specific corrective measures is necessary to guide the early stages of the site's development toward its desired goal. The corrective measures proposed for 2014 are summarized on Table 5.

The 2012 monitoring data estimated that 28.6% of the mitigation site's vegetation cover consisted of invasive species. Since this is in excess of the 10% threshold set forth by the NJDEP the implementation of an invasive species management plan was necessary. The level of cover by undesirable species necessitated the need to develop a corrective measures plan in 2012. This proposed two-step process was implemented in 2013 and initially involve the manual removal of individual plants followed by the treatment of the remaining undesirable plants. As discussed previously, the treatment approach varied based on the presence of desirable species. In those areas dominated by desirable species, the treatment was selective in that the undesirable species were treated individually by hand while in areas in which common reed was the dominant species the entire area was sprayed to achieve the best result. Continued monitoring will be done to retard the colonization and spread of undesirable species.

Table 5 Proposed Corrective Measures for 2014	
Task 1	Replanting a total of 120 woody plants in those portions of the mitigation site that had the highest coverage of invasive species in 2013 (the areas were treated in the Fall of 2013). To be implemented in between early May and June of 2014.
Task 2	Seeding and replanting with 2,900 herbaceous species in all areas affected by the implementation of the 2013 invasive species management measures. To be implemented in between early May and June of 2014.
Task 3	Replace goose exclusion fence in the areas proposed for replanting immediately after completion of plant installation between early May and June of 2014.
Task 4	Continued herbicide treatment to control remaining invasive species between August and October of 2014.

The continued management of both common reed and purple loosestrife is recommended to continue into 2014 due to the proximity of the site to seed sources of common reed and the difficulty in eradicating this species in one treatment event. As done in 2013, all herbicide treatments will be conducted by an NJDEP licensed aquatic pesticide applicators/operators in accordance with an approved aquatic pesticide treatment permit.

As described previously, those parts of the mitigation site with the highest levels of invasive species were treated in a manner that the installation of additional plant material will be necessary to satisfy the desired objective of the mitigation plan as well as the conditions of the permit. As indicated in Table 5, 120 additional woody plants as well as 2,900 herbaceous plants will be installed in areas impacted by invasive species management measures. The shrubs proposed for planting include salt tolerant shrub species such as groundsel bush (*Baccharis halimifolia*), false indigo (*Amorpha fructosa*) and arrowwood (*Virburnum dentatum*). Inclusion of false indigo and arrowwood is proposed to increase the species richness of the site. Much of the goose exclusion fencing in the eastern part of the mitigation site was destroyed by superstorm Sandy. Fencing will be replaced in areas proposed for revegetation. The herbaceous plants to be installed will be selected from the list of plants initially installed on the site.

Although the presence of invasive species was a key focus of the corrective measures implemented in 2013 a considerable portion of the mitigation site, especially in the western part of the site, was dominated by desirable species. Moreover, in these areas the vegetation was well established and consisted of a number of different species. The invasive species management measures implemented in 2013 in concert with the replanting proposed for 2014 should serve to keep the project on a positive path that will ultimately fulfill the permit requirements set forth by the NJDEP.

8.0 REFERENCES

EPA, June 11, 2010, Letter, ARARs identified and addressed prior to start of IRA, Standard Chlorine Superfund Site. Key Environmental, Inc., October 2008, Final Interim Response Action Workplan (IRAW), Standard Chlorine Chemical Company Site and Diamond Site, Kearny, New Jersey.

Evergreen Environmental, LLC, June 25, 2012 Bill of Sale and Conveyance between Evergreen and PRG for 0.225 Wetland Mitigation Credits

Key Environmental, Inc., April 2010, Shoreline Restoration and Tidal Emergent Wetland Mitigation Plan, Interim Response Action, SCCC Site and Diamond Site, Kearny, New Jersey.

Key Environmental, Inc. August 8, 2012, Construction Completion Report – Mitigation. 1015, 1025-1035 Belleville Turnpike, Kearny, Hudson County, New Jersey, SCCC Site - Block 287, Lots 48, 49, 50, 51, 52, 52R and portion of Lot 32.01, Diamond Site - Block 287, Lots 32.02, 46, 47, and 47R.

NJDEP DLUR, March 26, 2010, Waterfront Development Permit/Flood Hazard Permit, Water Quality Certificate, SCCC and Diamond Sites, Interim Response Action, City of Kearny, Hudson County.

NJDEP, June 30, 2010, Letter RE: Wetland Mitigation Plan Approval, SCCC and Diamond Sites Interim Response Action, City of Kearny, Hudson County.

NJDEP, June 30, 2010, Letter RE: Wetland Mitigation Plan Approval, SCCC and Diamond Sites Interim Response Action, City of Kearny, Hudson County.

Newcomb, Lawrence, 1977. *Wildflower Guide.*

Princeton Hydro, LLC. May 2009. Wetland Delineation Report for Standard Chlorin and Diamond, Block 287, lots 46, 47, 48, 49, 50, 51, 52 and 52r, Town of Kearny, Hudson County, New Jersey.

Princeton Hydro, LLC., April 8, 2011, Letter RE: Request to Modify Wetland Mitigation Approach, SCCC and Diamond Sites, Kearny, New Jersey.

APPENDIX A

Copies of Permits and Approvals

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF DREDGING AND SEDIMENT TECHNOLOGY
P.O. BOX 028
TRENTON, NEW JERSEY 08625-0028
(609) 292-1250
FAX: (609) 777-1914

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Acting Commissioner

March 26, 2010

Mr. Peter W. Sawchuck, P.E.
Project Manager
Key Environmental Incorporated
456 Route 22 West
Suite D
Whitehouse Station, New Jersey 08889

RE: Waterfront Development Permit/Flood Hazard Permit, Water Quality Certificate
Applicant: Standard Chlorine Chemical Inc. and Tierra Solutions, Inc.
Application No(s): 0907-09-0007.1 FHA 090001 (Flood Hazard Permit)
0907-09-0007.1 WFD090001 (In-Water Waterfront Development Permit)
0907-09-0007.1 CDT0800001 (Water Quality Certificate)
Project: Standard Chlorine Chemical Inc. (SCCC) and Tierra Solutions, Inc. (Diamond Site)
Interim Response Action
City of Kearny, Hudson County
Block: 287, Lots 48,49,50,51,52,52R and portion of lot 32.01 (SCCC site)
Block: 287, Lots 32.02, 46, 47 and 47R (Diamond Site)

Dear Mr. Sawchuck:

Enclosed, please find an approved construction permit. Please read the permit and its terms and Conditions carefully. If you consider yourself aggrieved by our decision regarding your application, you may request a hearing by completing the requirements of the attached *administrative hearing request checklist and tracking form.* Unless you request a hearing to contest this permit or its conditions, you have accepted its terms and conditions.

You are required to keep a copy of your permit and the approved drawings at the construction site for the duration of the project. Failure to do so is a violation of the permit.

If you are required to record a Grant of Conservation Restriction/Easement, you must present the Department with proof that you have recorded it within ninety (90) days of issuance of this permit. You may NOT COMMENCE CONSTRUCTION until you have properly recorded the Division of Land Use Regulation approved Grant of Conservation Restriction/Easement documents and fulfilled the pre-construction conditions of this permit.

If a tidelands grant, lease or license is required as a condition of this permit, you may not begin construction until the Bureau of Tidelands Management has delivered the necessary conveyances. Construction prior to the receipt of the necessary conveyances is in violation of State law and will subject you to fines up to $1,000.00 plus $100.00 per day. Furthermore, the cost for the tidelands instrument may be higher since the property claimed will be appraised as improved property. You may be required to remove any unauthorized structures placed in tidelands claimed areas.

Please do not hesitate to contact the Office's project manager, listed on the first page of the permit, to discuss any concerns or questions you may have. Thank you for working with the staff of the Office to protect our state's natural resources.

Sincerely,

Suzanne U. Dietrick

Suzanne U. Dietrick, Chief
Office of Dredging and Sediment Technology
Site Remediation Program

C: James Cannon, NY District, ACOE, Regulatory Branch
Chris Kanakis, SRP, OBR

Mr. Edward Als
Remedial Project Manager
US EPA Region 2
New York Remediation Branch
290 Broadway, 20th Floor
New York, NY 10007-1866

ADJUDICATORY HEARING REQUEST CHECKLIST AND TRACKING FORM

I. Permit Being Appealed:

_____
Facility Name

_____ _____
Issuance Date of Final Permit Decision Permit Number

II. Person Requesting Hearing:

_____ _____
Name/Organization Name of Attorney (if applicable)

_____ _____

_____ _____

_____ _____
Address Address of Attorney

_____ _____
Telephone Number Telephone Number of Attorney

III. Please include the following information as part of your request:

A. The date the permittee received the permit;
B. A copy of the Denial of Permit and a list of all issues being appealed;
C. The legal and factual questions at issue;
D. A statement as to whether you raised each legal and factual issue during the public comment period;
E. An estimate of the amount of time required for the hearing;
G. A request, if necessary, for a barrier-free hearing location for disabled persons;
H. A clear indication of any willingness to negotiate a settlement with the Department prior to the Department's processing of your hearing request to the Office of Administrative Law; and
I. This form, completed, signed and dated with all of the information listed above, including attachments, to:

1. Office of Legal Affairs
   ATTENTION: Adjudicatory Hearing Requests
   Department of Environmental Protection
   401 East State Street
   PO Box 402, Trenton, New Jersey 08625-0402
2. Suzanne Dietrick, Chief
   Office of Dredging and Sediment Technology
   401 East State Street
   PO Box 028, Trenton, New Jersey 08625-0029
3. Any other person named on the permit (if you are a permittee under that permit).
4. The permittee(s) (if you are a person seeking consideration as a party to the action).

IV. Signature: _____ Date: _____

PROJECT COMPLETION REPORT

This Project Completion Report must be mailed or faxed to the proper address below. Please circle the appropriate permit type(s).

Please mail notice of completion of projects authorized under a **Freshwater Wetlands Individual, General Permit or Transition Area Waiver, Major or Minor Stream Encroachment Permit, or Highlands Approval** to:

State of New Jersey
Department of Environmental Protection
Coastal & Land Use Compliance & Enforcement
P.O. Box 422
Trenton, NJ 08625-0422
Attention: Manager, Coastal & Land Use Compliance & Enforcement
Fax to: (609) 633-6798

Please mail notice of completion of projects authorized under an **Individual CAFRA or Waterfront Development Permit or Coastal General Permit** to:

State of New Jersey
Department of Environmental Protection
Coastal & Land Use Compliance & Enforcement
1510 Hooper Avenue
Toms River, NJ 08753
Attention: Manager, Coastal & Land Use Compliance & Enforcement
Fax to: (732) 255-0877

Permit Information
Project Manager: _____
Permit Number(s): _____
_____
_____
Date of Completion: _____

The undersigned hereby certifies that all activities approved by the Department within the above referenced permit/s have been constructed and completed in accordance with the plans approved therein, that said project is in compliance with all terms and conditions of the permit, and that any unauthorized encroachments have been removed.

Engineer's Signature and Seal: _____
New Jersey License Number: _____
Date: _____

CONSTRUCTION REPORT

This Project Commencement Report must be mailed or faxed to the proper address below. Please circle the appropriate permit type(s).

Please mail notice of commencement of projects authorized under a **Freshwater Wetlands Individual, General Permit or Transition Area Waiver, Major or Minor Stream Encroachment Permit, or Highlands Approval** to:

State of New Jersey
Department of Environmental Protection
Coastal & Land Use Compliance & Enforcement
P.O. Box 422
Trenton, NJ 08625-0422
Attention: Manager, Coastal & Land Use Compliance & Enforcement
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Department of Environmental Protection
Coastal & Land Use Compliance & Enforcement
1510 Hooper Avenue
Toms River, NJ 08753
Attention: Manager, Coastal & Land Use Compliance & Enforcement
Fax to: (732) 255-0877

Permit Information
Project Manager: _____
Permit Number(s): _____
_____
_____
Date of Commencement: _____

I hereby give notice that construction will begin on the above noted project on the date stated above (must give at least 7 days notice). Also, as required by the permit, a copy of the above referenced permit(s) along with all approved drawings shall be available for inspection at the project site throughout construction.

Engineer's Signature and Seal: _____
New Jersey License Number: _____
Date: _____

DEPARTMENT OF ENVIRONMENTAL PROTECTION
SITE REMEDIATION PROGRAM
OFFICE OF DREDGING AND SEDIMENT TECHNOLOGY
401 East State Street, P.O. Box 028
Trenton, NJ 08625

PERMIT

In accordance with the laws and regulations of the State of New Jersey, the Department of Environmental Protection hereby grants this permit to perform the activities described below. This permit is revocable with due cause and is subject to the limitations, terms and conditions listed below and on the attached pages. For the purpose of this document, "permit" means "approval, certification, registration, authorization, waiver, etc." Violation of any term, condition or limitation of this permit is a violation of the implementing rules and may subject the permittee to enforcement action.	Approval Date March 26, 2010 Expiration Date March 25, 2015

Permit Number/s	Type of Approval/s	Enabling Statute/s
0907-09-0007.1 FHA 080001 WFD080001 CDT080001	In-Water Waterfront Development Flood Hazard Area Permit Water Quality Certification Waterfront	NJSA 12:5-3 NJSA 58:10A

Applicant	Project Location
Standard Chlorine Chemical Company, Inc. 1025-1035 Belleville Turnpike Kearny, NJ 07032 Tierra Solutions, Inc. Two Tower Center Boulevard - 10 Floor East Brunswick, NJ 08816	Interim Response Action Standard Chlorine Chemical Company, Inc 1025-1035 Belleville Turnpike Kearny, Hudson County Interim Response Action Diamond Site 1015 Belleville Turnpike Kearny, Hudson County

Description of Authorized Activities and Limit of Disturbance

Construction activities associated with the interim remedial action of the 25-acre Standard Chlorine Chemical Company, Inc (SCCC) site and the 27-acre Diamond Site located on the Hackensack River in Kearny, New Jersey. The remediation of the sites are being implemented pursuant to a Interim Response Action Workplan (IRAW) Addendum approved by the Department on March 27, 2008. The Department's Site Remediation Program is currently reviewing an IRAW addendum submitted on October 2008.

The construction activities authorized under this permit consist of the following:

- Removal of approximately 6,800 cy of sediments to a depth of approximately 3 feet or to the meadowmat/confining unit in the Hackensack River along the eastern shoreline. Sediment removal will occur approximately 50' waterward of the Sheetpile to be installed along the existing shoreline. The material will be removed using a long reach excavator(s) from the shoreline and placed in either on-site consolidation areas or lagoons which are also being remediated as part of the IRAW or disposed off at an off-site location approved by the Department's Site Remediation Program. The area disturbed during removal of the sediments will be restored to pre-existing elevations using clean fill material.
- Construction of a slurry wall system enclosing both the SCCC and Diamond Site. Construction of approximately 1,220 feet of steel sheet pile along the Hackensack River at or above the Mean High Water Line elevation of 3.38 feet.
- Installation of groundwater extraction and/or recovery wells, and associated piping within the 100-year floodplain and areas of the sites under New Jersey Meadowland Commission (NJMC) jurisdiction. A portion of the well system is proposed to be installed on the adjacent Koppers Seaboard Site owned by Hudson County Improvement Authority.

SEE PROJECT DESCRIPTION ON PAGE 2 OF THE PERMIT

Prepared by: Suzanne M. Patterson

THIS PERMIT IS NOT EFFECTIVE AND NO CONSTRUCTION APPROVED BY THIS PERMIT, OR OTHER REGULATED ACTIVITY, MAY BE UNDERTAKEN UNTIL THE APPLICANT HAS SATISFIED ALL PRE-CONSTRUCTION CONDITIONS AS SET FORTH IN THIS PERMIT PURSUANT TO N.J.A.C. 7:7E-1.5(b)4.

Received or Recorded by County Clerk

This permit is not valid unless authorizing signature appears on the last page.

PROJECT DESCRIPTION (Continued)

- Construction of a groundwater treatment system at elevation 11.0 feet. A temporary surcharge pile will be located in the area of the proposed concrete pad for the groundwater treatment system.
- The removal of contaminated sediment from the South Ditch. The sediment will be placed in the SCCC Consolidation Area. The South Ditch will been be converted to a stormwater piping system with discharge to the Hackensack River. The existing 24 inch outfall pipe into the Hackensack River will be reconstructed with a new tide check valve.
- The existing lagoons located on the SCCC site will be dewatered and then backfilled with contaminated soil and/or sediment from other remedial activities at the SCCC site. Once placed, the entire SCCC consolidation area will be capped with an interim surface cover.
- Soil and/or sediment from remedial activities at the Diamond site will be place in the Diamond Consolidation Area and capped with an interim surface cover.
- A total of 0.06 acres (2,614 square feet) of tidal emergent wetlands included in a total of 1.4 acres (61,000 square feet) of intertidal subtidal shallows will be disturbed for the installation of the steel sheet pile wall and sediment excavation in the Hackensack River. Mitigation is required for this impact.
- A total of 1.59 acres of existing freshwater emergent wetlands and existing isolated wetlands will be permanently disturbed during remedial activities. Mitigation is required for this impact.

The site is located entirely within the New Jersey Meadowlands District. This permit is authorized under, and in compliance with the following Rules on Coastal Zone Management, N.J.A.C. 7:7E-1.1 et seq., specifically; Intertidal and Subtidal Shallows (7:7E-3.15), Wetlands (7:7E-3.27) and Hackensack Meadowlands District (7:7E-3.45). This permit also includes a Water Quality Certification issued pursuant to Section 401 of the Federal Clean Water Act (33USC 1251et seq).

By issuance of this permit, the State of New Jersey does not relinquish tidelands ownership or claim to any portion of the subject property or adjacent properties. This permit is subject to the permittee receiving the tidelands licences as applied for on December 18, 2009 (DEP File #0907-09-0007.2 TDI090001) and December 22, 2209 (DEP File #0907-09-0007.3 TDI090002) prior to initiation of any construction activities in these designated tideland areas. In addition, this permit is approved subject to, and in accordance with, all applicable Tidelands Grants issued for the Standard Chlorine Company site and the Diamond Site as shown on Tideland Conveyance Map 693-2154 and Property Survey plan dated 7/24/09, last revised 7/29/09 and prepared by Douglas Dykstra, PLS of Dykstra Associates, PC.

The permittee shall allow an authorized Division representative the right to inspect the construction pursuant to N.J.A.C. 7:7E-1.5(b) 4.

STANDARD CONDITIONS:

1. **Extent of approval:**
   a. This document grants permission to perform certain activities that are regulated by the State of New Jersey. The approved work is described by the text of this permit and is further detailed by the approved drawings listed herein. All work must conform to the requirements, conditions and limitations of this permit and all approved drawings.

   b. If you alter the project without prior approval, or expand work beyond the description of this permit, you may be in violation of State law and may be subject to fines and penalties. Approved work may be altered only with the prior written approval of the Department.

   c. You must keep a copy of this permit and all approved drawings readily available for inspection at the work site.

2. **Acceptance of permit:** If you begin any activity approved by this permit, you thereby accept this document in its entirety, and the responsibility to comply with the terms and conditions. If you do not accept or agree with this document in its entirety, **do not begin** construction. You are entitled to request

an appeal within a limited time as detailed on the attached *Administrative Hearing Request Checklist and Tracking Form.*

3. **Recording with County Clerk:** You must record this permit in the Office of the County Clerk for each county involved in this project. You must also mail or fax a copy of the front page of this permit to the Department showing the received stamp from each County Clerk within 30 days of the issuance date.

4. **Notice of Construction:** You must notify the Department in writing at least 7 days before you begin any work approved by this permit by submitting the attached construction report. The Construction Reports are also available at www.nj.gov/dep/landuse.

5. **Expiration date:** All activities authorized by this permit must be completed by the expiration date shown on the first page unless otherwise extended by the Division. At that time, this permit will automatically become invalid and none of the approved work may begin or continue until a replacement permit is granted. (Some permits may qualify for an extension of the expiration date. Please contact the Department for further information.)

6. **Rights of the State:**

   a. This permit is revocable and subject to modification by the State with due cause.

   b. Representatives from the State have the statutory authority to enter and inspect this site to confirm compliance with this permit and may suspend construction or initiate enforcement action if work does not comply with this permit.

   c. This permit does not grant property rights. The issuance of this permit shall not affect any action by the State on future applications, nor affect the title or ownership of property, nor make the State a party in any suit or question of ownership.

7. **Other responsibilities:** You must obtain all necessary local, Federal and other State approvals before you begin work. All work must be stabilized in accordance with the *Standards for Soil Erosion and Sediment Control in New Jersey*, and all fill material must be free of toxic pollutants in toxic amounts as defined in section 307 of the Federal Act.

SPECIAL CONDITIONS:

8. The permittee shall immediately inform the Department of any unanticipated adverse effects on the environment not described in the application or in the conditions of this permit.

9. Consistency with the Areawide Water Quality Management Plan: The Department of Environmental Protection, as the Statewide Water Quality Management Planning Agency, has reviewed your project for consistency with the provisions and recommendations of the Hudson County Water Quality Management Plan. We have found your project to be consistent with this plan. Please be advised that if changes are made to the proposed plans which would result in a change in anticipated wastewater flow volumes, such as the addition of sewage generating structures or a proposed increase in size to previously proposed structures; or if there is a change in the proposed method of wastewater treatment, this determination is no longer valid. The amended plans must be submitted to the Department to determine Consistency with the Water Quality Management Plans.

11. All necessary local, Federal, and other State approvals must be obtained by the applicant prior to the commencement of the herein-permitted activities.

12. The drawings hereby approved are:

    T-01, E-01, IRA-01, ESA-01 to 02, SSP-01 to SSP-04, CBS-01 to CBC-04, SD-01 to SD-02, SC-CA-01 to SC-CA-03, DS-CA-01 to DS-CA-03, SM-01 to SM-03, DW-01, SWM-01 to SWM-04, SPA-01 to SPA-03 and MTG-01 to MTG-04 consisting of thirty-six sheets entitled "Land Use Regulation Permit Application Drawings, SCCC and Diamond Sites, Kearny, Hudson County, New Jersey, dated 9/1/09 last

revised 11/23/09 (Sheet E-01 only), and prepared by Alan E. Briggs, P.E. of Key Environmental Incorporated.

13. This authorization of activities includes a transition area waiver for work in the transition area determined by the Department, which is necessary to accomplish the regulated activity. In addition, the permit to conduct a regulated activity in a wetland or open water includes the Department's approval of a Water Quality Certificate for these activities.

14. The permittee shall comply with the conditions specified in the Interim Response Action Workplan (IRAW) Addendum approved by the Department on March 27, 2008, and any amendments thereto as approved by the Department's Site Remediation Program.

15. The permittee shall install a turbidity curtain along the entire length of the sediment removal as depicted on the approved plans. Said turbidity curtains shall be maintained during the entire removal action within the Hackensack River.

16. Any future development on this site located in the Flood Hazard Area or in a riparian zone or any development which will increase the stormwater discharge, shall require a new Flood Hazard Area Permit from the Division of Land Use Regulation.

17. Any future development on the site shall comply with the Public Trust Rights Rule (7:7E-8.11). Said public access shall comply with the standards found at 7:7E-8.11(e) for development along the Hackensack River.

MITIGATION CONDITIONS:

Failure to comply with the standards herein constitutes a violation of the Rules on Coastal Zone Management and subjects the permittee to appropriate enforcement action and/or suspension or revocation of the permit. **This permit is not effective for the purpose of conducting regulated activities authorized by this permit until the following special conditions are satisfied:**

1. Mitigation must be done prior to or concurrent with regulated activity. At any given time, the mitigation must track at the same or greater percentage of completion as the project as a whole. For example, when the project is 50 percent completed, the mitigation project cannot be less than 50 percent completed.

2. The mitigation proposal must be submitted to the Division **prior to the initiation of regulated activities authorized by this permit**. Mitigate for the loss of 0.06 acres of estuarine wetlands and 1.4 acres of intertidal subtidal shallows through either an on-site or off-site creation, restoration or enhancement project as detailed in condition numbers 4 through 20.

3. Mitigation for the loss of 1.59 acres of freshwater emergent wetlands is required by the United States Environmental Protection Agency, Region 2 under CERCLA. The permittee shall provide the Department with the approval letter from the USEPA Region 2 of the mitigation plan.

4. **Within 30 days of the issuance of this permit**, for an on-site or off-site individual mitigation project, the permittee must submit a mitigation proposal to the Division of Land Use Regulation (Division) for review and approval. The mitigation proposal must include the creation, restoration and/or enhancement of an area of tidal wetlands and intertidal subtidal shallows of equal ecological value to those that will be lost by the authorized activity. This proposal must include a proposed construction schedule for the mitigation project. **Prior to commencement of regulated activities authorized by this permit, the Division must approve of the proposed mitigation project in writing.** Failure to comply with Items a. and b. below will subject the permittee to appropriate enforcement action.

   a. **Within 30 days of the issuance of this permit** submit for review and approval a **conceptual** plan showing the location and proposed hydrology of the mitigation site.

b. **Within 30 days of receiving Division approval of the conceptual mitigation proposal,** the permittee must submit a **final design** of the mitigation project and include all the items listed on the checklist entitled Checklist for Completeness: Creation, Restoration or Enhancement for a Freshwater Wetland Mitigation Proposal located on the Internet at http://www.nj.gov/dep/landuse/forms/index.html.

5. In the event that there is a conflict between the permit conditions and the approved mitigation plans and proposal, the permit conditions take precedent.

6. This permit is not effective until the permittee has completed, signed and filed with the County Clerk (the Registrar of Deeds and Mortgages in some counties), the Division approved conservation restriction for the mitigation site. An example copy of the Wetlands Mitigation Area Model Deed/Conservation Restriction is located on the Internet at http://www.nj.gov/dep/landuse/forms/index.html). A draft copy of the deed restriction must be submitted to the Department for review and approval **prior** to filing the conservation restriction in the office of the County Clerk. The restriction shall be included on the deed, and recorded in the office of the County Clerk (the Registrar of Deeds and Mortgages in some counties), in the county wherein the lands of the mitigation project are located, within 10 days of approval of the final wetland mitigation proposal. Within 10 days of filing the conservation restriction, the permittee must send a copy of the conservation restriction to the Division for verification.

7. At least thirty (30) days in advance of the start of construction of the wetland mitigation project, the permittee shall notify the Division, in writing, for an on-site pre-construction meeting between the permittee, the contractor, the consultant and the Division.

8. The mitigation designer must be present on-site during critical stages of construction of the mitigation project. This includes but is not limited to herbicide applications, sub-grade inspection, final grade inspection, and planting inspection to ensure the intent of the mitigation design and its predicted wetland hydrology is realized in the landscape.

9. Mitigation designs are not static documents and changes may be necessary to ensure success of the project. Should the mitigation designer determine that the mitigation plan as designed and approved by the Division will not achieve the proposed wetland condition due to the actual conditions encountered during construction, the mitigation designer must immediately notify the Division. The mitigation designer must propose an alternative plan to achieve the proposed wetland condition that must be approved by the Division in writing. If the Division provides the mitigation designer with comments on the alternative plan, the mitigation designer shall revise the plan to conform to the Division's comments. Solely the Division shall make the determination as to whether or not the alternative plan as submitted conforms to the Divisions comments. Any modifications to the plan that are approved by the Division must be shown on a signed and sealed revised plan. The As-Built plans required as a part of the Construction Completion Report may serve as the signed and sealed revised plans required to be submitted as part of the construction modification process described above if time constraints warrant such action and have been approved by the Division in writing.

10. The permittee shall assume all liability for accomplishing corrective work should the Division determine that the compensatory mitigation has not been 100% successful. Remedial work may include re-grading and/or replanting the mitigation site. This responsibility is incumbent upon the permittee until such time that the Division makes the finding that the mitigation project is successful.

11. Within 5 days following final grading of the site, a disc must be run over the site to eliminate compaction. The mitigation designer must be present to oversee this phase of the project and confirm with the Division this activity has occurred prior to planting of the site.

12. Following the final grading of the mitigation site and prior to planting, the permittee shall notify the Division for a post-grading construction meeting between the permittee, contractor, consultant and the Division. The permittee must give the Division at least thirty (30) days notice prior to the date of this meeting.

13. Within 30 days following the final planting of the mitigation project, the permittee shall submit a Construction Completion Report to the Division detailing as-built conditions (see below) and any changes to the approved mitigation plan that were made during construction. The Construction Completion Report shall contain, at a minimum, the following information:

    a. A completed Wetland Mitigation Project Completion of Construction Form. This form is located on the Internet at http://www.nj.gov/dep/landuse/forms/index.html and certifies that the mitigation project has been constructed as designed and that the proposed area of wetland creation, restoration or enhancement has been accomplished;

    b. As-Built plans which depict final grade elevations at one foot contours and include a table of the species and quantities of vegetation that were planted including any grasses that may have been used for soil stabilization purposes;

    c. Show on the as-built plans that the boundaries of the wetland mitigation area have been visibly marked with 3 inch white PVC pipe extending 4 feet above the ground surface. The stakes must remain on the site for the entire monitoring period;

    d. Photos of the constructed wetland mitigation project with a photo location map as well as the GPS waypoints in NJ state plane coordinates NAD 1983;

    e. To document that the required amount of soil has been placed/replaced over the entire area of the mitigation site, provide a minimum of 6 soil profile descriptions to a depth of 20 inches. The location of each soil profile description should be depicted on the as built plan as well as provide the GPS waypoints in NJ state plane coordinates NAD 1983;

    f. Submit soil test results demonstrating at least 8% organic carbon content (by weight) was incorporated into the A-horizon for sandy soil and for all other soil types 12% organic content or if manmade top soil was used it consisted of equal volumes of organic and mineral materials;

    g. The permittee shall post the mitigation area with several permanent signs as shown on the approved mitigation plan which identify the site as a wetland mitigation project and that development mowing, cutting, dumping and draining of the property is prohibited; and

    h. The signs must also state the name of the permittee, Department's permit number along with a contact name and phone number.

14. If the Division determines that the mitigation project is not constructed in conformance with the approved plan, the permittee will be notified in writing and will have 60 days to submit a proposal to indicate how the project will be corrected. No financial surety will be released by the Division until the permittee demonstrates that the mitigation project is constructed in conformance with the approved plan, all soil has been stabilized and there is no active erosion.

15. The permittee shall monitor the mitigation project for 5 full growing seasons if it is a proposed forested or scrub/shrub wetland and 3 full growing seasons for an emergent wetland or State open water beginning the year after the mitigation project has been completed. The permittee shall submit monitoring reports to the Division of Land Use Regulation no later than December 31st of each full monitoring year. All monitoring reports must include the standard items identified in the checklists entitled Wetland Mitigation Monitoring Project Checklist and Tidal Wetland Mitigation Monitoring Checklist and the information requested below. The Wetland Mitigation Monitoring Project Checklist and Tidal Wetland Mitigation Monitoring Checklist are located on the Internet at http://www.nj.gov/dep/landuse/forms/index.html.

16. All monitoring reports must include all of the following information:

    a. All monitoring reports except the final one must include documentation that it is anticipated, based on field data, that the goals of the wetland mitigation project including the transition area, as stated in the approved wetland mitigation proposal and the permit will be satisfied. If the permittee is finding

problems with the mitigation project and does not anticipate the site will be a full success then recommendations on how to rectify the problems must be included in the report with a time frame in which they will be completed;

b. All monitoring reports except the final one must include field data to document that the site is progressing towards 85 percent survival and 85 percent area coverage of mitigation plantings or target hydrophytes (Target hydrophytes are non-invasive native species to the area and similar to ones identified on the mitigation planting plan). If the proposed plant community is a scrub/shrub or a forested wetland the permittee must also demonstrate each year with data that the woody species are thriving, increasing in stem density and height each year. If the field data shows that the mitigation project is failing to meet the vegetation survival, coverage and health goals, the monitoring report should contain a discussion of steps that will be taken to rectify the problem, including a schedule of implementation;

c. All monitoring reports except the final one must include documentation of any invasive or noxious species (see below for list of species) colonizing the site and how they are being eliminated. The permittee is required to eliminate either through hand-pulling, application of a pesticide or other Department approved method any occurrence of an invasive/noxious species on the mitigation site during the monitoring period;

d. All monitoring reports except the final one must include documentation that demonstrates the proposed hydrologic regime as specified in the mitigation proposal appears to be met. If the permittee is finding problems with the mitigation project and does not anticipate the proposed hydrologic regime will be or has not been met then recommendations on how to rectify the problem must be included in the report along with a time frame within which it will be completed;

e. The final monitoring report must include documentation to demonstrate that the goals of the wetland mitigation project including the required transition area, as stated in the approved wetland mitigation proposal and the permit, has been satisfied. Documentation for this report will also include a field wetland delineation of the wetland mitigation project based on techniques as specified in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989);

f. The final monitoring report must include documentation the site has an 85 percent survival and 85 percent area coverage of the mitigation plantings or target hydrophytes. The permittee must also document that all plant species are healthy and thriving and if the proposed plant community contains trees demonstrate that the trees are at least five feet in height;

g. The final monitoring report must include documentation demonstrating the site is less than 10 percent occupied by invasive or noxious species such as but not limited to (Source: Snyder, David and Sylvan R. Kaufman. 2004. An overview of nonindigenous plant species in New Jersey. New Jersey Department of Environmental Protection, Division of Parks and Forestry, Office of Natural Lands Management, Natural Heritage Program, Trenton, New Jersey. 107 pages.): *Acer platanoides* (Norway Maple), *Ailanthus altissima*, (Tree of Heaven), *Allaria petiole* (Garlic mustard), *Ampelopsis brevipedunculata* (Porecelain berry), *Berberis thunbergii* (Japanese barberry), *Carex kobomugi* (Japanese sedge), *Celastrus orbiculatus* (Asian Bittersweet), *Centaurea biebersteiniior maculosa* (Spotted knapweed), *Cirsium arvense* (Canadian thistle), *Dipsacus fillonum* (Wild teasel), *Dipsacus laciniatus* (Cut-leaf teasel), *Elaegnus umbellata* (Autumn olive), *Euonymus alata* (Winged spindletree), *Lespedeza cuneata* (Chinese bush-clover), *Lonicera japonica* (Japanese honeysuckle), *Lonicera morrowii* (Morrow's bush honeysuckle), *Lonicera tartarica* (Tartarian honeysuckle), *Lythrum salicaria* (Purple loosestrife), *Meliotus officinalis* (Yellow sweetclover), *Microstegium vimineum* (Japanese stiltgrass), *Myriophyllum spicatum* (Eurasian water-milfoil), *Polygonum cuspidatum* (Japanese knotweed), *Polygonum perfoliatum* (Mile-a-minute), *Potamogeton crispus* (Curly leaf pondweed), *Ranunculus ficaria* (Lesser celandine), *Rhamnus cathartica* (Common buckthorn), *Robinia pseudoacacia* (Black locust), *Rosa multiflora* (Multiflora rose), *Rubus phoeniocolasius* (Wineberry).

h. The final monitoring report must include documentation that demonstrates that the proposed hydrologic regime as specified in the mitigation proposal, which proves the mitigation site is a wetland has been satisfied. The documentation shall include when appropriate monitoring well data, stream gauge data, photographs and field observation notes collected throughout the monitoring period; and

i. The final monitoring report must include documentation that the site contains hydric soils or there is evidence of reduction occurring in the soil throughout the delineated wetlands.

17. Once the required monitoring period has expired and the permittee has submitted the final monitoring report, the Division will make the finding that the mitigation project is either a success or a failure. This mitigation project will be considered successful if the permittee demonstrates all of the following:

a. That the goals of the wetland mitigation project including acreage and the required transition area, as stated in the approved wetland mitigation proposal and the permit, has been satisfied. The permittee must submit a field wetland delineation of the wetland mitigation project based on the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989) which shows the exact ____ acreage of State open waters, emergent, scrub/shrub and/or forested wetlands in the mitigation area;

b. The site has an 85 percent survival and 85 percent area coverage of the mitigation plantings or target hydrophytes which are species native to the area and similar to ones identified on the mitigation planting plan. All plant species in the mitigation area are healthy and thriving. All trees are at least five feet in height;

c. The final monitoring report must include documentation demonstrating the site is less than 10 percent occupied by invasive or noxious species such as but not limited to (Source: Snyder, David and Sylvan R. Kaufman. 2004. An overview of nonindigenous plant species in New Jersey. New Jersey Department of Environmental Protection, Division of Parks and Forestry, Office of Natural Lands Management, Natural Heritage Program, Trenton, New Jersey. 107 pages.): *Acer platanoides* (Norway Maple), *Ailanthus altissima,* (Tree of Heaven), *Allaria petiole* (Garlic mustard), *Ampelopsis brevipedunculata* (Porecelain berry), *Berberis thunbergii* (Japanese barberry), *Carex kobomugi* (Japanese sedge), *Celastrus orbiculatus* (Asian Bittersweet), *Centaurea biebersteiniior maculosa* (Spotted knapweed), *Cirsium arvense* (Canadian thistle), *Dipsacus fillonum* (Wild teasel), *Dipsacus laciniatus* (Cut-leaf teasel), *Elaegnus umbellata* (Autumn olive), *Euonymus alata* (Winged spindletree), *Lespedeza cuneata* (Chinese bush-clover), *Lonicera japonica* (Japanese honeysuckle), *Lonicera morrowii* (Morrow's bush honeysuckle), *Lonicera tartarica* (Tartarian honeysuckle), *Lythrum salicaria* (Purple loosestrife), *Meliotus officinalis* (Yellow sweetclover), *Microstegium vimineum* (Japanese stiltgrass), *Myriophyllum spicatum* (Eurasian water-milfoil), *Polygonum cuspidatum* (Japanese knotweed), *Polygonum perfoliatum* (Mile-a-minute), *Potamogeton crispus* (Curly leaf pondweed), *Ranunculus ficaria* (Lesser celandine), *Rhamnus cathartica* (Common buckthorn), *Robinia pseudoacacia* (Black locust), *Rosa multiflora* (Multiflora rose), *Rubus phoeniocolasius* (Wineberry).

d. The site contains hydric soils or there is evidence of reduction occurring in the soil; and,

e. The proposed hydrologic regime as specified in the mitigation proposal has been satisfied. This criteria must be satisfied to prove the mitigation site is a wetland.

18. All remaining financial surety, if required, will be released concurrent with the Division notifying the permittee that the mitigation project is a success.

19. If the mitigation project is considered a failure, the permittee is required to submit a revised mitigation plan in order to meet the success criteria identified in Condition No. 18 above. The plan shall be submitted within 30 days of receipt of the letter from the Division indicating the wetland mitigation project was a failure. The financial surety, if required, will not be released by the Division until such time that the permittee satisfies the success criteria as stipulated in condition number 19.

20. If the permittee fails to perform mitigation within the applicable time period the acreage of mitigation required shall be increased by 20% each year after the date mitigation was to begin.

3/26/10
DATE

Suzanne U. Dietrick, Chief
Office of Dredging and Sediment Technology

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Land Use Regulation
Mail Code 501-02A, P.O. Box 420,
Trenton, NJ 08625-0420
Fax # (609) 777-3656
www.state.nj.us/dep/landuse

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

Mr. Peter W. Sawchuck, P.E.
Project Manager
Key Environmental Incorporated
575 State Route 28
Suite 208
Raritan, New Jersey 08869

March 7, 2013

RE: Credit Purchase at MRI 3 Approval and Permit Modification
NJDEP Application No(s): 0907-09-0007.1 WFD 090001 (In-Water Waterfront Development Permit)
Project: "Standard Chlorine Chemical Inc. (SCCC) and Tierra Solutions, Inc. (Diamond Site) Interim Response Action"
Location: Block: 287, Lots 47, 47R, 49, 52, 52R
City of Kearny, Hudson County

Dear Mr. Sawchuck:

This letter is in response to your letter dated May 21, 2012 requesting a permit modification to authorize the purchase of 0.225 credits from the MRI 3 Mitigation Bank. The Division had conceptually authorized the credit purchase since a portion of the on-site mitigation could not be constructed properly due to onsite conditions and the fact that there was nowhere else on the site that the mitigation could be provided. The Division received confirmation of the sale of 0.225 credits for the above-referenced permit from the MRI 3 banker on June 26, 2012. This letter hereby modifies the above-referenced permit to authorize the purchase of 0.225 credits from MRI 3 to satisfy a portion of the required mitigation.

We look forward to receiving your completion of construction report and we will contact you to schedule an inspection at that time. Please contact Jo Dale Legg of my staff at (609) 777-0454 or by email at JoDale.Legg@dep.state.nj.us, should you have any questions concerning this letter.

Sincerely,

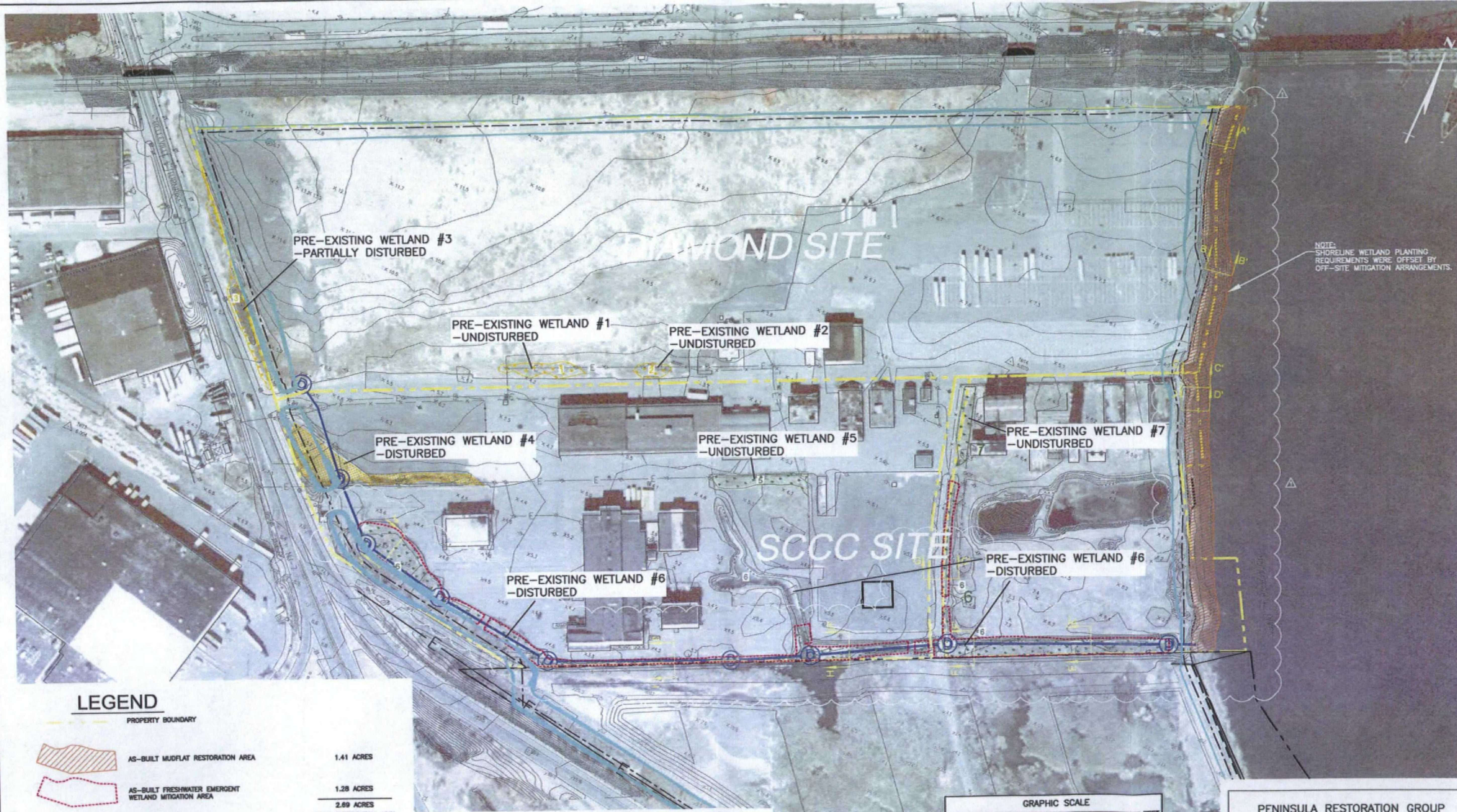
Susan D. Lockwood

Susan Lockwood, Supervisor
Bureau of Technical Services
Division of Land Use Regulation

C: Suzanne Dietrick, ODST

APPENDIX B

As Built Survey



LEGEND

PROPERTY BOUNDARY

AS-BUILT MUDFLAT RESTORATION AREA	1.41 ACRES
AS-BUILT FRESHWATER EMERGENT WETLAND MITIGATION AREA	1.28 ACRES
	2.69 ACRES
	TOTAL RESTORATION AREA

LIMIT OF PRE-EXISTING FRESHWATER EMERGENT WETLAND

LIMIT OF PRE-EXISTING ISOLATED WETLAND

CROSS SECTION (SEE DRAWINGS MTG-03 AND MTG-04)

6 WETLAND NUMBER

SLURRY WALL WORKING PLATFORM

CATCH BASIN

PIPE

NOTES:
1. THE LIMITS OF THE FRESHWATER EMERGENT WETLAND MITIGATION AREA WERE FIELD-ADJUSTED BASED UPON THE EXACT POSITION/ALIGNMENT OF THE REMEDIATED SOUTH DITCH SIDESLOPES. THESE ADJUSTMENTS WERE MADE WITHIN THE SOUTH DITCH AREA TO ENSURE THAT THE SPECIFIED MINIMUM MITIGATION AREA OF 1.20 ACRES IS PROVIDED.
2. AS-BUILT DRAWING WAS PREPARED BASED ON THE CORRESPONDING INTERIM RESPONSE ACTION CIVIL ENGINEERING DESIGN DRAWING. THIS AS-BUILT DRAWING DEPICTS MAJOR CHANGES TO OR DEVIATIONS FROM THE DESIGN DRAWING, AS DOCUMENTED BY FIELD INSPECTION BY KEY'S CQA PERSONNEL. AS-BUILT DIMENSIONS OR MEASUREMENTS MAY VARY SLIGHTLY FROM THOSE DEPICTED ON THIS AS-BUILT DRAWING.

GRAPHIC SCALE
50 100 200 300 400 FEET
SCALE: 1" = 200'

REV #	DATE	DESCRIPTION	APPD
△			
1	12/28/11	AS-BUILT	CAZ
0	12/22/09	ISSUED FOR BID	AEB

REFERENCE:
1. EXISTING GROUND SURFACE CONTOURS PER AIR SURVEY, DULLES, VIRGINIA, APRIL 14, 2001. HORIZONTAL REFERENCE: NEW JERSEY STATE PLANE COORDINATES (NAD 1927). VERTICAL REFERENCE:NATIONAL GEODETIC VERTICAL DATUM (NGVD 1929).
2. PROPERTY BOUNDARY SHOWN HEREON FROM SHEET 1 OF 1 TITLED "SURVEY OF PROPERTY, TAX LOTS 32.02, 46, 47 & 47R, BLOCK 287, TAX LOTS 48, 49, 50, 51, 52 AND 52R, BLOCK 287, TOWN OF KEARNY, HUDSON COUNTY, NEW JERSEY," DATED JULY 1, 2009 (REVISION 2: JULY 29, 2009), PREPARED BY DYKSTRA ASSOCIATES, PC.
3. EXISTING WETLANDS PER WETLAND DELINEATION BY PRINCETON HYDRO, LLC FOR KEY ENVIRONMENTAL, INC. PERFORMED IN MARCH 2009.
4. IMAGE PROVIDED BY PRINCETON HYDRO, LLC.

ISSUE DATE: 8/22/12

KEY ENVIRONMENTAL, INC.
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW JERSEY PROFESSIONAL ENGINEER — ALAN E. BRIGGS — GE38785 — LICENSED

STATE OF NEW JERSEY
CERTIFICATE OF AUTHORIZATION
TO OFFER ENGINEERING SERVICES
24GA27961400

PENINSULA RESTORATION GROUP

DRWN: WAA	DATE: 08/13/09
CHKD: GWB	DATE: 08/13/09
APPD: GWB	DATE: 08/13/09
SCALE:	AS SHOWN

KEY ENVIRONMENTAL INCORPORATED

INTERIM RESPONSE ACTION DESIGN
SCCC AND DIAMOND SITES
KEARNY, NEW JERSEY

SHORELINE RESTORATION/WETLAND MITIGATION PLAN

PROJECT NO: 09-803/804

MTG-01

y:\00civil\kearny\iraw as-built\production drawings\iraw\mtg-01 shoreline restoration\wetland mitigation plan.dwg Last Saved By: Scomer 6/27/2012 3:15 PM Plotted By: Shelly Comer 8/21/2012 5:45 PM Scale: 1:1

APPENDIX C

Vegetation Cover Data

NEW JERSEY COUNTY MAP

PRINCETON HYDRO, LLC.
1108 OLD YORK ROAD
P.O. BOX 720
RINGOES, NJ 08551
*with offices in NJ, PA and CT

1 inch = 250 feet

0 125 250 Feet

NOTES:

1. Vegetation monitoring locations are approximate.

2. 2012 orthoimagery obtained from NJ Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS).

3. Wetland limit is approximate. Limit digitized from 'Shoreline Restoration/ Wetland Mitigation Plan' by Key Environmental Inc, August 22, 2012.

Map Projection:
NAD 1983 StatePlane New Jersey FIPS 2900 Feet

VEGETATION MONITORING LOCATIONS

2013 WETLAND MONITORING
STANDARD CHLORINE
CHEMICAL CO.
& FORMER DIAMOND SITE
TOWN OF KEARNY
HUDSON COUNTY, NEW JERSEY

Legend

- Vegetation Monitoring Location
- Wetland Limit

WETLAND MONITORING DATA
FOR
SCCC SITE, HUDSON COUNTY, NEW JERSEY

Field Investigator(s): Mark Gallagher	Date: 9/26/2013
Vegetation Unit/Name: Emergent Wetland	Sample Plot No.: W-1

Species	Percent Areal Cover
Un-vegetated (barren)	0
Vegetative Cover:	
Scientific Name	**Common Name**
Annual salt marsh aster	25
Salt grass	50
Common reed	2
Salt master fleabane	17
Rough barnyard grass	2
Late flowering thoroughwort	5
Switch grass	2
Percent Vegetative Cover	**100**
Total Vegetative Cover	**103**

Notes

WETLAND MONITORING DATA
FOR
SCCC SITE, HUDSON COUNTY, NEW JERSEY

Field Investigator(s): Mark Gallagher	Date: 9/26/2013
Vegetation Unit/Name: Emergent Wetland	Sample Plot No.: W-2

Species	Percent Areal Cover
Un-vegetated (barren)	0
Vegetative Cover:	
Scientific Name	**Common Name**
Switch grass	50
Common reed	5
Annual salt marsh aster	25
Salt grass	20
Yellow nut sedge	15
Salt marsh fleabane	5
Seaside goldenrod	2
Percent Vegetative Cover	**100**
Total Vegetative Cover	**122**

Notes

WETLAND MONITORING DATA
FOR
SCCC SITE, HUDSON COUNTY, NEW JERSEY

Field Investigator(s): Mark Gallagher
Vegetation Unit/Name: Emergent Wetland

Date: 9/26/2013
Sample Plot No.: W-3

Species	Percent Areal Cover
Un-vegetated (barren)	0
Vegetative Cover:	
Scientific Name	**Common Name**
Switch grass	80
Groundsel bush	25
Purple loosestrife	2
Percent Vegetative Cover	**100**
Total Vegetative Cover	**107**

WETLAND MONITORING DATA
FOR
SCCC SITE, HUDSON COUNTY, NEW JERSEY

Field Investigator(s): Mark Gallagher	Date: 9/26/2013
Vegetation Unit/Name: Emergent wetland	Sample Plot No.: W-4

Species	Percent Areal Cover
Un-vegetated (barren)	0
Vegetative Cover:	
Scientific Name	**Common Name**
Annual saltmarsh aster	30
Switch grass	30
Common reed	5
Fall panicum	20
Salt marsh fleabane	10
Rough barnyard grass	2
Late flowering thoroughwort	7
Salt meadow cordgrass	10
Percent Vegetative Cover	**100**
Total Vegetative Cover	**114**

Notes

WETLAND MONITORING DATA
FOR
SCCC SITE, HUDSON COUNTY, NEW JERSEY

Field Investigator(s): Mark Gallagher	Date: 9/26/2013
Vegetation Unit/Name: Emergent Wetland	Sample Plot No.: W-5

Species	Percent Areal Cover
Un-vegetated (barren)	10
Vegetative Cover:	
Scientific Name	**Common Name**
Late flowering thoroughwort	35
Switch grass	10
Yellow nut sedge	2
Rough barnyard grass	12
Salt marsh fleabane	1
Wild carrot	2
Annual salt marsh aster	30
Prairie cordgrass	10
Percent Vegetative Cover	**90**
Total Vegetative Cover	**102**

Notes

WETLAND MONITORING DATA
FOR
SCCC SITE, HUDSON COUNTY, NEW JERSEY

Field Investigator(s): Mark Gallagher	Date: 9/26/2013
Vegetation Unit/Name: Emergent Wetland	Sample Plot No.: W-6

Species	Percent Areal Cover
Un-vegetated (barren)	30
Vegetative Cover:	
Scientific Name	**Common Name**
Common reed	40
Late flowering thoroughwort	5
Seaside goldenrod	15
Black grass	18
Salt marsh fleabane	8
Percent Vegetative Cover	**70**
Total Vegetative Cover	**86**

Notes

WETLAND MONITORING DATA
FOR
SCCC SITE, HUDSON COUNTY, NEW JERSEY

Field Investigator(s): Mark Gallagher	Date: 9/26/2013
Vegetation Unit/Name Emergent Wetland	Sample Plot No.: W-7

Species	Percent Areal Cover
Un-vegetated (barren)	10
Vegetative Cover:	
Scientific Name	**Common Name**
Groundsel bush	45
Late flowering thoroughwort	30
Seaside goldenrod	15
Switch grass	10
Salt marsh fleabane	1
Percent Vegetative Cover	**90**
Total Vegetative Cover	**101**

Notes

WETLAND MONITORING DATA
FOR
SCCC SITE, HUDSON COUNTY, NEW JERSEY

Field Investigator(s): Mark Gallagher	Date: 9/26/2013
Vegetation Unit/Name: Emergent wetland	Sample Plot No.: W-8

Species	Percent Areal Cover
Un-vegetated (barren)	0
Vegetative Cover:	
Scientific Name	**Common Name**
Late flowering thoroughwort	20
Common reed	7
Switch grass	75
Seaside goldenrod	2
Salt marsh fleabane	5
Percent Vegetative Cover	**100**
Total Vegetative Cover	**109**

Notes

WETLAND MONITORING DATA
FOR
SCCC SITE, HUDSON COUNTY, NEW JERSEY

Field Investigator(s): Mark Gallagher	Date: 9/26/2013
Vegetation Unit/Name: Emergent Wetland	Sample Plot No.: W-9

Species	Percent Areal Cover
Un-vegetated (barren)	

Vegetative Cover:

Scientific Name	Common Name
Narrow leaved cattail	65
Black grass	60
Common reed	2
Salt marsh fleabane	2
Percent Vegetative Cover	**100**
Total Vegetative Cover	**139**

Notes

WETLAND MONITORING DATA
FOR
SCCC SITE, HUDSON COUNTY, NEW JERSEY

Field Investigator(s): Mark Gallagher	Date: 9/26/2013
Vegetation Unit/Name: Emergent Wetland	Sample Plot No.: W-10

Species	Percent Areal Cover
Un-vegetated (barren)	0
Vegetative Cover:	
Scientific Name / **Common Name**	
Common reed	80
Annual salt marsh aster	15
Salt marsh cordgrass	10
Percent Vegetative Cover	**100**
Total Vegetative Cover	**105**

Notes

WETLAND MONITORING DATA
FOR
SCCC SITE, HUDSON COUNTY, NEW JERSEY

Field Investigator(s): Mark Gallagher	Date: 9/26/2013
Vegetation Unit/Name: Emergent Wetland	Sample Plot No.: W-11

Species	Percent Areal Cover
Un-vegetated (barren)	0
Vegetative Cover:	
Scientific Name	**Common Name**
Common reed	100
Saltmarsh bulrush	5
Annual salt marsh aster	5
Percent Vegetative Cover	**100**
Total Vegetative Cover	**110**

WETLAND MONITORING DATA
FOR
SCCC SITE, HUDSON COUNTY, NEW JERSEY

Field Investigator(s): Mark Gallagher	Date: 9/26/2013
Vegetation Unit/Name: Emergent Wetland	Sample Plot No.: W-12

Species	Percent Areal Cover
Un-vegetated (barren)	
	0
Vegetative Cover:	
Scientific Name	**Common Name**
Common reed	100
Salt meadow cordgrass	12
Salt grass	2
Percent Vegetative Cover	**100**
Total Vegetative Cover	**114**

APPENDIX D

Plant List

2013 PLANT SPECIES LIST

The following is a list of plant species identified in the wetland and enhanced transition area during site inspections at the Standard Chlorine Chemical Company, Inc, (SCCC) & Former Diamond Sites, Kearny Township, Hudson County, New Jersey in 2013. Nomenclature follows USFWS (1988 & 1996). NA- Not applicable, NI - No indicator, NL - Not listed.

Scientific Name	Common Name	Classification
Apiaceae (Carrot Family)		
Daucus carota	Queen Anne's lace	NL
Asteraceae (Aster Family)		
Baccharis halimifolia	groundsel bush	FACW
Eupatorium serotinum	late flowering thoroughwort	FAC
Euthamia graminifolia	flat-top goldenrod	FAC
Pluchea purpurascens	Salt marsh fleabane	OBL
Solidago sempervirens	seaside goldenrod	FACW
Solidago spp.	goldenrod	FACU
Symphyotrichum subulatum	Eastern annual saltmarsh aster	OBL
Cyperaceae (Sedge Family)		
Cyperus esculentus	Yellow nut sedge	OBL
Schoenoplectus robustus	Salt marsh bulrush	OBL
Chenopodiaceae (Goosefoot Family)		
Atriplex patula	halberd-leaved orache	FACW
Juncaceae (Rush family)		
Juncus gerardii	black grass	FACW+
Lythraceae (Loosetrife Family)		
Lythrum salicaria	Purple loosestrife	FACW
Myricaceae (Bayberry Family)		
Myrica pensylvanica	northern bayberry	FAC
Poaceae (Grass Family)		
Distichlis spicata	salt grass	OBL
Echinochloa muricata	rough barnyard grass	FACW
Panicum virgatum	switch grass	FAC
Panicum amarum	coastal panic grass	FACU
Panicum dichotomiflorum	fall panicum	FACW
Phragmites australis	common reed	FACW
Spartina alterniflora	saltmarsh cordgrass	OBL
Spartina patens	salt hay	OBL

Spartina pectinata	prairie cordgrass	
Polygonaceae (Buckwheat Family)		
Polygonum pennsylvanica	Pennsylvania smartweed	FACW
Salicaceae (Willow Family)		
Populus deltoides	cottonwood	FAC
Typhaceae (Cattail Family)		
Typha latifolia	Broad lvd. Cattail	OBL
Verbenaceae (Verbena Family)		
Verbena hastata	blue vervain	FACW+

APPENDIX E

Photographs

Photo 1: Wetland in vicinity of Sample Plot 1.

Photo 2: Common reed present along edge of wetland mitigation site.

Photographs – 2013 Wetland Monitoring Report
SCCC Site
Town of Kearny
Hudson County, New Jersey
Project No. 502.016

Princeton Hydro

Photo 3: Looking to west toward sample plots 5 and 6. Note abundance of desirable plants.

Photo 4: Looking to the north toward sample plot; a plot dominated by narrow leaved cattail.

Photographs – 2013 Wetland Monitoring Report
SCCC Site
Town of Kearny
Hudson County, New Jersey
Project No. 502.016

Princeton Hydro

Photo 5: Vegetation area in area of sample plot 7.

Photo 6: Looking to west toward sample lot 11 and 12. Note dye-back of treated common reed.

Photographs – 2013 Wetland Monitoring Report
SCCC Site
Town of Kearny
Hudson County, New Jersey
Project No. 502.016

Princeton Hydro

Photo 7: View of wetland looking toward sample plot 4.

Photo 8: Looking west toward sample lot 3.

Photographs – 2013 Wetland Monitoring Report
SCCC Site
Town of Kearny
Hudson County, New Jersey
Project No. 502.016

Princeton Hydro

Photo 9: Vegetation in vicinity of sample plot 10. Note dieback of common reed after treatment.

Photo 10: Vegetation in vicinity of sample plot 11. Note dieback of common reed after treatment.

Photographs – 2013 Wetland Monitoring Report
SCCC Site
Town of Kearny
Hudson County, New Jersey
Project No. 502.016

Princeton Hydro

Photo 11: Wetland in vicinity of sample plot 6.

Photo 12. Common reed bordering wetland mitigation site.

Photographs – 2013 Wetland Monitoring Report
SCCC Site
Town of Kearny
Hudson County, New Jersey
Project No. 502.016

Princeton Hydro

Photo 13: View of mitigation site in vicinity of sample plot 12, April 2013.

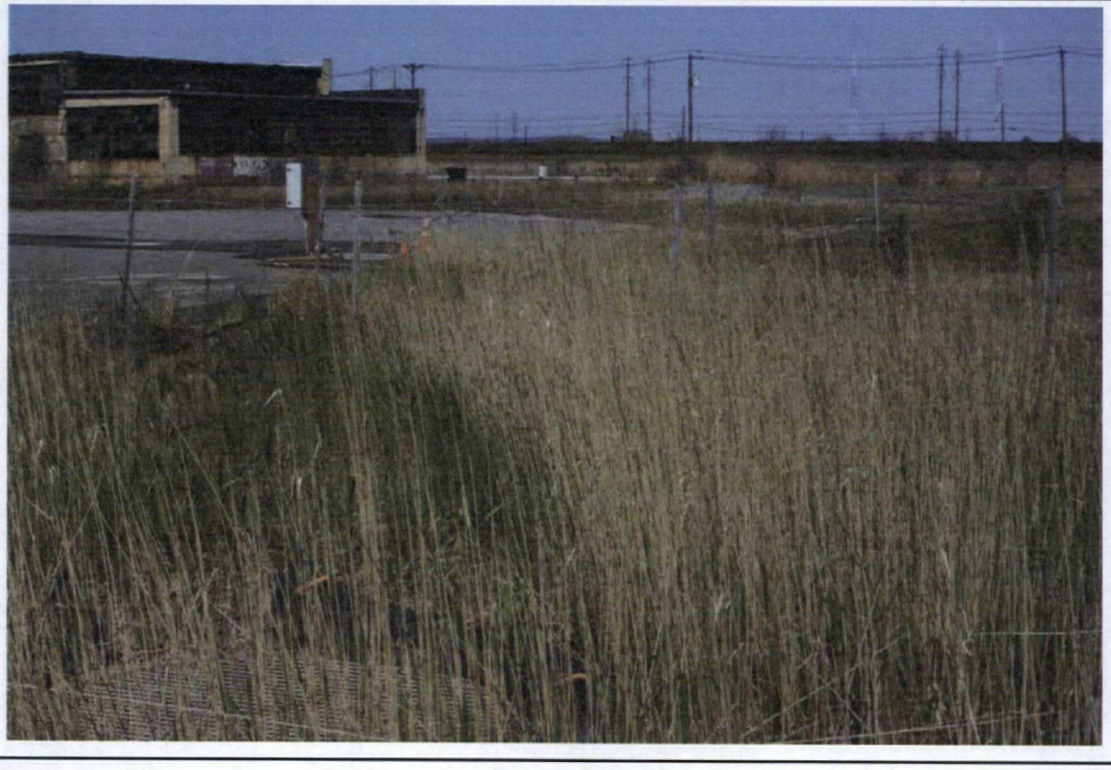


Photo 14: View of common reed in westernmost part of mitigation site in April 2013.

Photographs – 2013 Wetland Monitoring Report
SCCC Site
Town of Kearny
Hudson County, New Jersey
Project No. 502.016

Princeton Hydro